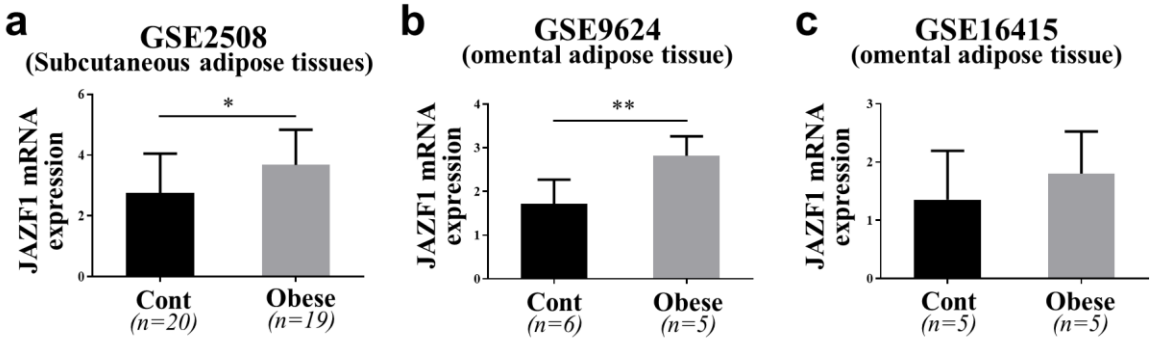

Figure S1. Human JAZF1 mRNA expression in adipose tissue on three GEO datasets (GSE2508, GSE9624, and GSE16415). a JAZF1 mRNA expression in subcutaneous adipose tissues from normal control (n = 20) and obese patient (n = 19) subjects. The data set included male and female subjects. **b** JAZF1 mRNA expression in omental adipose tissue from normal weight (n = 6) and an obese child (n = 5). The data set included male and female subjects. **c** JAZF1 mRNA expression in omentum visceral adipose tissue from normal control (n = 5) and obese subjects (n = 5). The data set included female subjects only. All data are presented as mean ± SD. *$p < 0.05$ and **$p < 0.001$. GEO, gene expression omnibus.

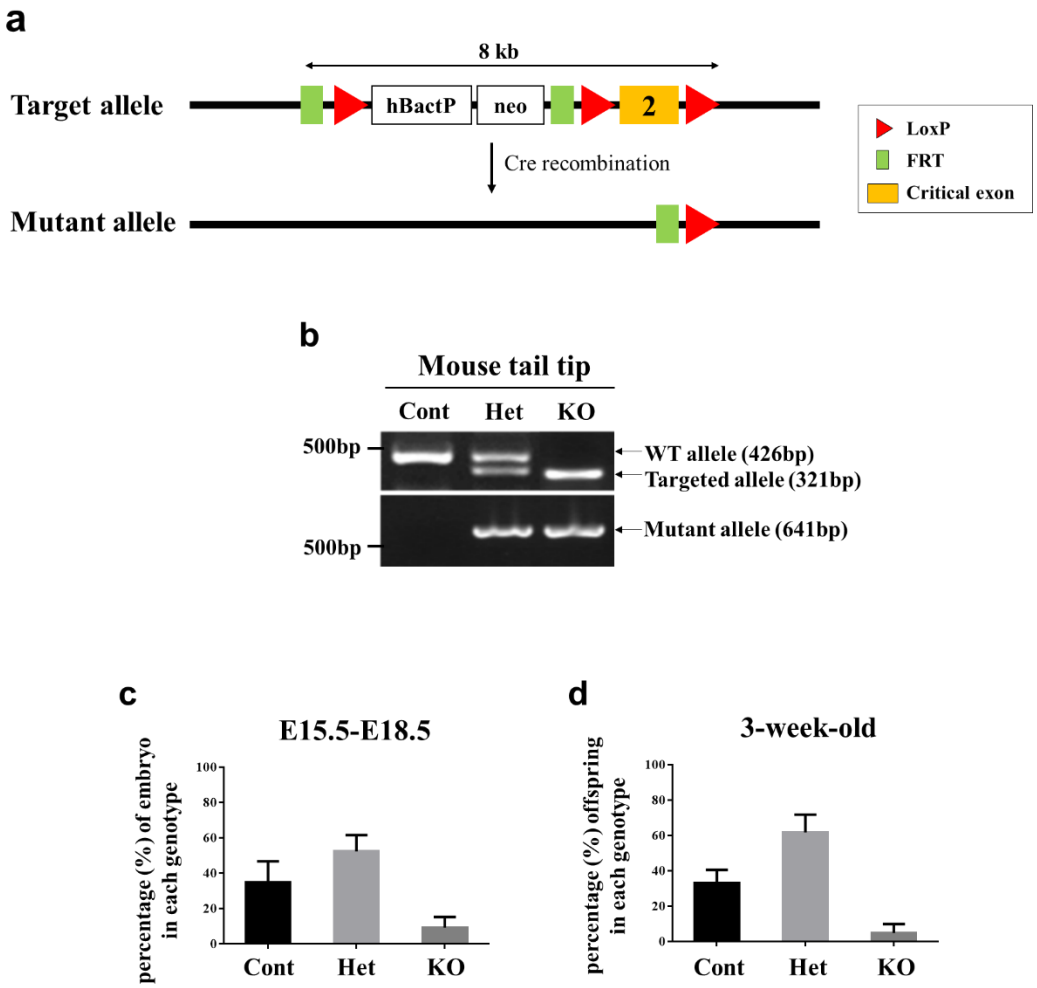

Figure S2. Generation of heterozygous JAZF1 deletion mice. a Schematic representation of the procedure for targeted JAZF1 and deleted locus lacking critical exon 2 by CMV-Cre-mediated recombination. **b** Allele-specific genotype analysis in the DNA sample from the tail tip of JAZF1 -KO (KO), JAZF1 -Het (Het), and JAZF1-Cont (Cont) mice. **c** Percentage (%) of embryos of each genotype at embryonic stages E15.5d-E18.5d by crossing male and female JAZF1-Het mice (total embryos, n = 31). **d** Percentage (%) of the offspring of each genotype obtained by crossing male and female JAZF1-Het mice (total offspring, n = 42).

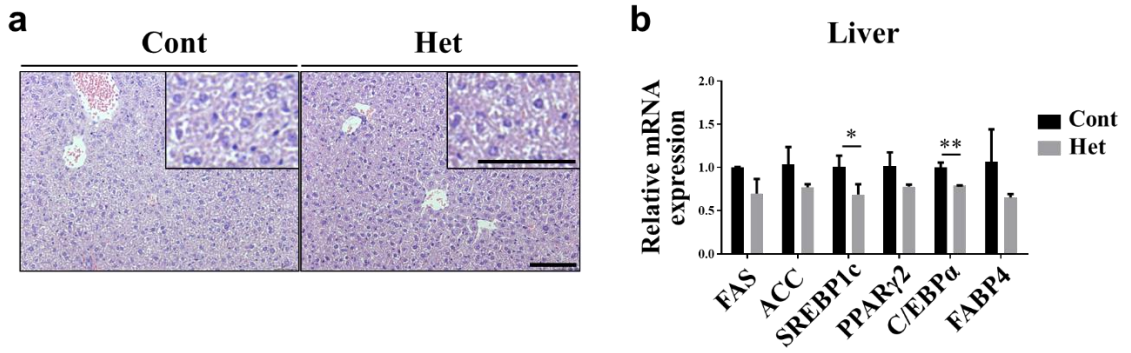

Figure S3. Histological and molecular analysis of liver in JAZF1-Het and JAZF1-Cont mice. JAZF1-Het (Het) and JAZF1-Cont (Cont) mice were fed ND for 8 weeks starting at 8-weeks-old. After 8 weeks of ND feeding, **a** H&E staining was performed in the liver of JAZF1-Het and JAZF1-Cont mice. Scale bar, 100 pm. **b** Relative mRNA expression of lipogenic markers (FAS, ACC, SREBP1c, PPARγ2, C/EBPα, and FABP4) in the liver of JAZF1-Het and JAZF1-Cont mice fed ND for 8 weeks (n = 6). All data are presented as mean ± SEM. *p < 0.05 and **p < 0.01..

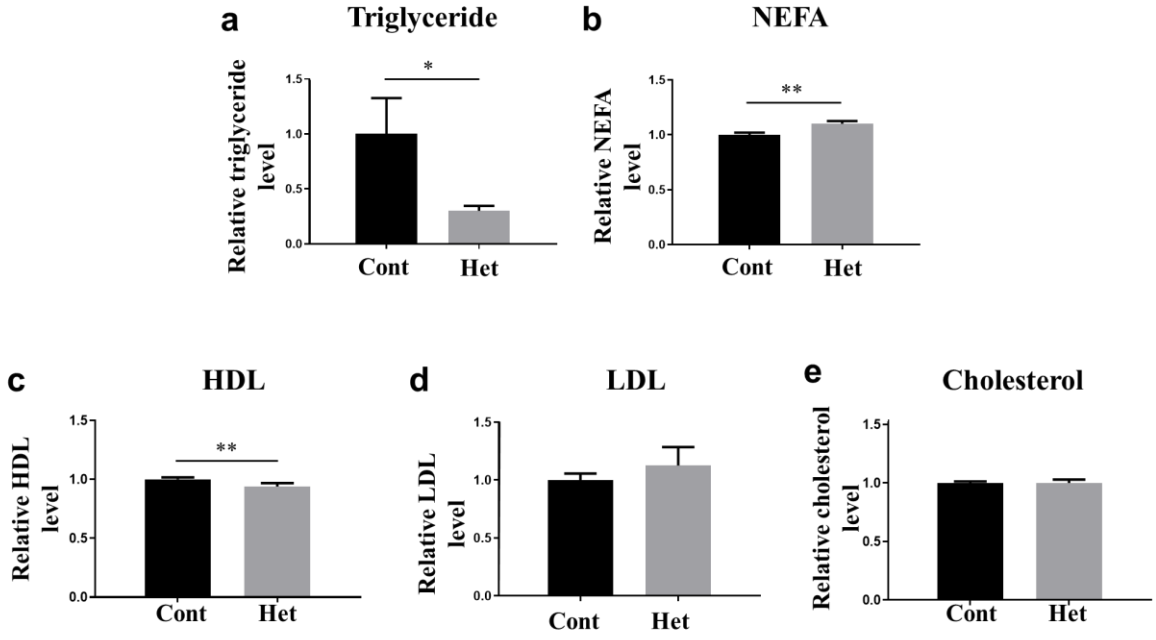

Figure S4. Serum analysis in JAZF1-Het and JAZF1-Cont mice Comparison of relative serum levels of **a** triglyceride (TG), **b** nonesterification free fatty acid (NEFA), **c** HDL, **d** LDL, and **e** cholesterol in JAZF1-Het (Het) and JAZF1-Cont (Cont) mice fed ND for 8 weeks (n = 6). All data are presented as mean ± SEM. *p < 0.05 and **p < 0.01.

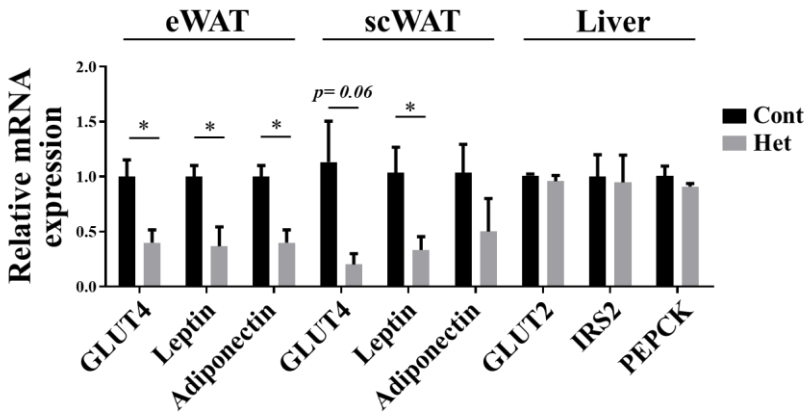

Figure S5. Insulin signaling and glucose homeostasis-related gene analysis in various tissues of JAZF1-Het mice. JAZF1-Het (Het) and JAZF1-Cont (Cont) mice were fed ND for 8 weeks starting at 8-weeks-old. After 8 weeks of ND feeding, insulin signaling and glucose homeostasis-related genes (GLUT4, GLUT2 Leptin, Adiponectin, IRS2, and PEPCK) were analyzed in various tissues (eWAT, scWAT, and liver) in JAZF1-Het and JAZF1-Cont mice (n = 6). All data are presented as mean ± SEM. *p < 0.05. eWAT, epididymal white adipose tissue; scWAT, subcutaneous adipose tissue.

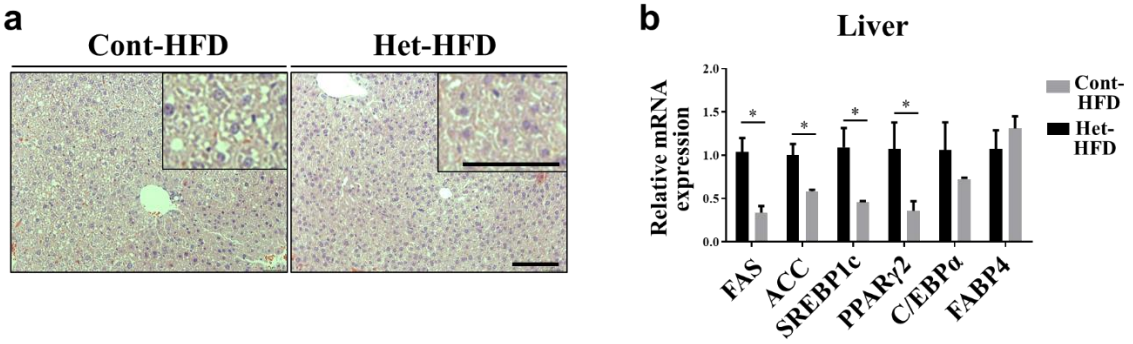

Figure S6. Histological and molecular analysis in the liver of JAZF1-Het-HFD and JAZF1-Cont-HFD mice. JAZF1-Het-HFD (Het-HFD) and JAZF1 -Cont-HFD (Cont-HFD) mice were fed HFD for 8 weeks starting at 8-weeks-old. After 8 weeks of HFD feeding, **a** H&E staining was performed in the liver of JAZF1-Het-HFD and JAZF1-Cont-HFD mice. Scale bar, 100 pm. **b** Relative mRNA expression of lipogenic markers (FAS, ACC, SREBP1c, PPARγ2, C/EBPα, and FABP4) in the liver of JAZF1-Het-HFD and JAZF1 -Cont-HFD mice (n = 6). All data are presented as mean ± SEM. *p < 0.01.

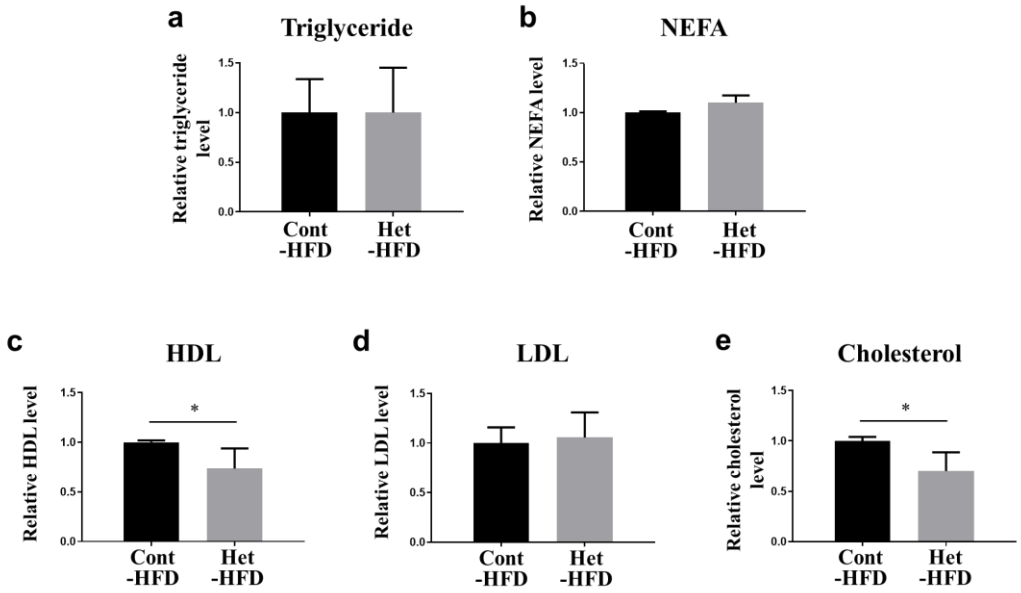

Figure S7. Serum analysis in JAZF1-Het-HFD and JAZF1-Cont-HFD mice Comparison of relative serum levels of **a** triglyceride (TG), **b** NEFA, **c** HDL, **d** LDL and **e** cholesterol in JAZF1-Het-HFD (Het-HFD) and JAZF1-Cont (Cont-HFD) mice fed HFD for 8 weeks (n = 6). All data are presented as mean ± SEM. *p < 0.05.

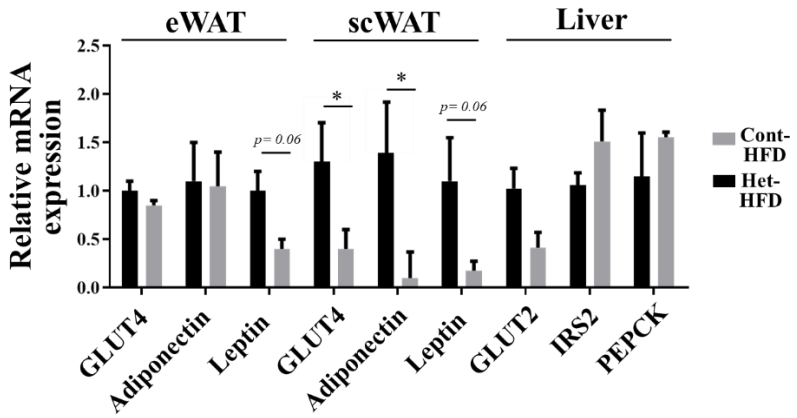

Figure S8. Insulin signaling and glucose homeostasis-related gene analysis in various tissues of JAZF1-Het-HFD and JAZF1-Cont-HFD mice. JAZF1-Het-HFD (Het-HFD) and JAZF1-Cont-HFD (Cont-HFD) mice were fed HFD for 8 weeks starting at 8-weeks-old. After 8 weeks of HFD feeding, insulin signaling and glucose homeostasis-related genes (GLUT4, GLUT2 Leptin, adiponectin, IRS2, and PEPCK) were analyzed in various tissues (eWAT, scWAT, and liver) in JAZF1-Het-HFD and JAZF1-Cont-HFD mice (n = 6). All data are presented as mean ± SEM. *p < 0.05. eWAT, epididymal white adipose tissue; scWAT, subcutaneous adipose tissue.

Table S1. Mouse primer sequence for allele-specific genotyping

Allele	Primer sequences (5'-3')	
WT	**5′-arm-forward**	: AGGCCTCCTCTTGACTCTGCGTGG
	3′-arm-reverse	: TATGTAATGGAGTGGCCTTCTAGC
Target	**5′-arm-forward**	: AGGCCTCCTCTTGACTCTGCGTGG
	LAR3-reverse	: CAACGGGTTCTTCTGTTAGTCC
Mutant	**Cre-forward**	: CGGTCGCTACCATTACCAGT
	Cre-reverse	: AACTGATGGCGAGCTCAGACC

Table S2. Mouse primer sequences for qRT-PCR

Gene	Primer sequences (5'-3')
JAZF1	F: CGCCGAGAACAGGAATCTCT
	R: GCTGAGGTGGAGTGGACACA
PPARγ2	F: CACAGAGATGCCATTCTGGC
	R: GGCCTGTTGTAGAGCTGGGT
C/EBPα	F: GGGCTCCTAATCCCTTGCTT
	R: CTCCATGAACTCACCCAGGAA
C/EBPβ	F: GTTTCGGGACTTGATGCAATC
	R: AACAACCCCGCCAGGAACAT
FABP4	F: AGTGAAAACTTTGATGATTATATG
	R: CCATGCCAGCCACTTTCCT
GATA2	F: ACAGGCCACTGACCATGAAG
	R:TCCTCGAAACATTCAGCCCC
GATA3	F: TTGGAATGCAGACACCACCT
	R: AGGAGTCTCCAAGTGTGCGAA
KLF2	F: AAGAGCTCGCACCTAAAGGC
	R: CTTTCGGTAGTGGCGGGTAA
KLF3	F: ACTCACGGGATACAGGTGGA
	R: GTGGGACGGGAACTTCAGAG
GLUT4	F: CTGGCCCCATCCCCTGGTTCA
	R: CAAATGTCCGGCCTCTGGTTTCAG
GLUT2	F: GGCCCTTGTCACAGGCATTCTTAT
	R: TGGACAGAAGAGCAGTAGCAGACA
PEPCK	F: TGCGGATCATGACTCGGATG
	R: AGGCCCAGTTGTTGACCAAA
Adiponectin	F: CCTCTTAATCCTGCCCAGTCA
	R: GCCATCCAACCTGCACAAGT
Leptin	F: ATCTCCGAGACCTCCTCCATC
	R: CATCCAGGCTCTCTGGCTTCT
IRS2	F: TCTTTCACGACTGTGGCTTCCTT
	R: CACTGGAGCTTTGCCCTCTGC
FAS	F: TGGTGGGTTTGGTGAATTGTC
	R: GCTTGTCCTGCTCTAACTGGAAGT
ACC	F: ATGTCCGCACTGACTGTAACCA
	R: TGCTCCGCACAGATTCTTCA
SREBP1c	F: GATCAAAGAGGAGCCAGTGC
	R: TAGATGGTGGCTGCTGAGTG
18S rRNA	F: GTAACCCGTTGAACCCCATT
	R: CCATCCAATCGGTAGTAGCG
JAZF1*	F: CTCCACCTCGACATAGCAGT
	R: TCCTGATCATCTCGGCAGAC
β-actin*	F: AGGGAAATCGTGCGTGACAT
	R:TGCTAGGAGCCAGAGCAGTA

*semiquantitative RT-PCR primers